pointic contact with any plane curve; but his method does not appear to admit of direct extension to curves of higher orders than conics having contact with any plane curve. The method here suggested would admit of such extension; and it may therefore be said to contain potentially the solution of the general problem of contact. But the labour of completely working out even the case of a cubic of nine-pointic contact would be very great. The case of the conic of five-pointic contact has been worked out, and the result agrees with Mr. Cayley's.

XIII. "On the Calculus of Functions." By WILLIAM SPOTTISWOODE, Esq., M.A., F.R.S. Received October 9, 1861.

(Abstract.)

In a paper published in the 'Philosophical Transactions' for 1861, p. 69, Mr. W. H. L. Russell has constructed systems of multiplication and division for functions of certain non-commutative symbols, viz. $\rho=x$, and $\pi=x\frac{d}{dx}$, and has given the quotient and remainder after both "internal" and "external division" of the symbolical function

$$\rho^n\phi_n(\pi)+\rho^{n-1}\phi_{n-1}(\pi)+\ \ldots\ \phi_0(\pi)$$

by the factor $\rho\psi_1(\pi)+\psi_0(\pi)$. But in the case of

$$\phi_n(\rho)\pi^n+\phi_{n-1}(\rho)\pi^{n-1}+\ \ldots\ \phi_0(\rho)$$

he has given only the quotient and remainder after internal division in the case of $n=3$. I have here investigated the general case. The formulæ will be best understood by reference to the memoir itself.

XIV. "On the Action of Hydriodic Acid upon Mannite." By J. A. WANKLYN, Esq., and Dr. ERLENMEYER. Communicated by Dr. FRANKLAND. Received October 24, 1861.

Mannite may be regarded as a six-atomic alcohol, or better as *hydride of hexyl*, in which six atoms of hydrogen are replaced by six atoms of peroxide of hydrogen.

$$\text{Mannite}=C_6H_8(HO)_6.$$